

# **EXHIBIT 29**

**REPORT SUBMITTED IN THE MATTER OF**

**Amy Bartoletti, Chia Siu, Nadine Mentor,  
Lisa Conley, and Brittany Sharpton**

**v.**

**Citigroup Inc. and Citigroup Global Markets Inc.**

**Civil Action No. 10 Civ. 7820 (PJO)  
United States District Court  
Southern District of New York**

**Professor David E. Bloom**

**Harvard University**

**December 11, 2012**

## **I. Introduction**

### **A. Qualifications**

I am the Clarence James Gamble Professor of Economics and Demography at Harvard University and Director of Harvard University's NIA-funded Program on the Global Demography of Aging. During the 2011-2012 academic year, I served as Visiting Professor at the Harvard Business School. From September 2001 through August 2011, I served as Chair of the Department of Global Health and Population at the Harvard School of Public Health. I am also a Research Associate at the National Bureau of Economic Research, where I serve as a member of three research programs: Labor Studies, Aging, and Health Economics. I received a B.S. in Industrial and Labor Relations from Cornell University in 1976, an M.A. in Economics from Princeton University in 1978, and a Ph.D. in Economics and Demography from Princeton University in 1981. Prior to joining the faculty of the Harvard University School of Public Health in 1996, I served on the public policy faculty at Carnegie-Mellon University and on the economics faculties at Harvard University and Columbia University. From July 1995 to June 1999, I served as Deputy Director of the Harvard Institute for International Development at Harvard University. From July 1987 to June 1996 I was Professor of Economics at Columbia University where I served as Chairman of the Department of Economics from 1990 to 1993. I have worked extensively in the areas of labor, population, and health economics and have been retained as a consultant to various public and private organizations, both within the United States and abroad. I have taught numerous courses on labor economics and on statistics and econometrics at both the graduate and undergraduate levels. I have also published over 350 articles, book chapters, and books. I currently serve as a member of the Book Review Board of *Science* magazine, and have previously served on its Board of Reviewing Editors. I also serve as Co-Editor of *The Journal of the Economics of Ageing* and have previously served as Associate Editor of the *Review of Economics and Statistics* and as Contributing Editor of *American Demographics*. In April 2005 I was elected Fellow of the American Academy of Arts and Sciences. My curriculum vitae, which contains other information describing my background, is attached as Exhibit 1.

Exhibit 2 identifies the cases in which I served as an expert witness and gave testimony, either by deposition or at trial, in the last four years.

I am being compensated for my work on this case at the rate of \$600 per hour. My compensation does not depend on the opinions or the conclusions I reach or the outcome of this case.

### **B. Scope of Report**

I have been retained by Citigroup to review and analyze documents and data in order to form an independent assessment as to whether one or more of the five plaintiffs in this case – Ms. Amy Bartoletti, Ms. Lisa Conley, Ms. Nadine Mentor, Ms. Brittany Sharpton, and Ms. Chia Siu – were subject to gender discrimination with respect to their selection for the reduction in force (hereafter RIF) that took place in Citigroup's Public Finance Department in November 2008.

In conducting my analyses, I reviewed and relied on the data and documents identified in Exhibit 3, as well as on information I received during conversations with Mr. Francis Chin, Mr. David Brownstein, and Mr. Bartley Livolsi.

## **II. Background**

### **A. Public Finance Department and RIF Process**

The Public Finance Department was part of Citigroup's Municipal Securities Division during the relevant time frame for this lawsuit (late 2007 through 2008). The Department operated in a highly competitive economic environment and mainly handled the structuring and marketing of municipal bonds to fund projects and programs undertaken by municipalities and other public agencies throughout the US. The Public Finance Department consisted predominantly of Product Groups (including, among others, the Healthcare Group, the Housing Group, and the Infrastructure Group) and Regional Groups (including, among others, the Southeast Group). The groups varied widely in terms of the expertise, skills, and networks embodied by their officers and research professionals, and would generate and execute business on their own or in collaboration with other groups. Cross-group mobility of professionals within the Public Finance Department was, apparently, quite infrequent.

Within the groups that comprised the Public Finance Department, professional employees could hold positions in a career progression that went, in order of increasing seniority, from Analyst to Associate to Assistant Vice President to Vice President to Director to Managing Director. Technical skill, work commitment, and capacity for teamwork were key desirable attributes of individuals holding positions at the lower end of the spectrum, as their main role was to assist their more senior counterparts in the generation or execution of business. Groups looked to individuals at the upper end of the spectrum for their leadership, capacity to generate business, and relationship capital.

The Public Finance Department was headed by Mr. Francis Chin during late 2007 and early 2008, as it had been since 1993. Mr. David Brownstein joined Mr. Chin as a Co-Head in early 2008. The Head/Co-Heads of the Public Finance Department reported to Mr. Ward Marsh, who was the Head of the Municipal Securities Division. The Administration Group and the Heads of the Public Finance Department's Product Groups reported directly to the Head/Co-Heads of the Public Finance Department. The Heads of the Public Finance Department's Regional Groups reported to the Head of Regional Operations, Mr. Bartley Livolsi, who, in turn, reported to the Head/Co-Heads of the Public Finance Department. A portion of the compensation received by the Department and Group Heads was in the form of incentives that depended on individual, Group, Department, and overall Company performance.

In late 2007, the Head of the Municipal Securities Division informed the Head of the Public Finance Department of the need for a RIF. This RIF led to 22 layoffs in the career progression from Analyst to Managing Director in the Public Finance Department. The Notice Dates for this RIF (hereafter referred to as RIF I) were December 18, 2007 through January 22, 2008.

Subsequent to RIF I, the Head of the Municipal Securities Division communicated the need for another RIF in the same career progression in the Public Finance Department. This second RIF (hereafter referred to as RIF II) led to 4 layoffs, with Notice Dates from March 18-19, 2008. Following RIF II, the need for a third RIF (hereafter referred to as RIF III) was communicated by the Head of the Municipal Securities Division. RIF III resulted in 15 layoffs, with Notice Dates from June 23 through July 7, 2008. Subsequent to RIF III, a decision was communicated from the Head of the Municipal Securities Division to the Co-Heads of the Public Finance Department to conduct a fourth RIF (hereafter referred to as RIF IV), which resulted in 29 layoffs with Notice Dates from November 21 through December 18, 2008.

RIF expectations for the Public Finance Department were communicated from the Head of the Municipal Securities Division to the Head/Co-Heads of the Public Finance Department. In consultation with selected senior members of the Department, the Head/Co-Heads of the Public Finance Department considered the possibility of closing or consolidating one or more groups or offices and translated the overall RIF expectations into group-specific RIF expectations. Assessment of future business opportunities was apparently the foremost consideration in the determination of those expectations (i.e., the resizing of the groups), which were conveyed to the Head of Regional Operations and the Group Heads.

In general, the Group Heads were responsible for selecting candidates for layoff. There were, however, some exceptions, such as when the Group Heads were themselves under consideration for layoff by the Head/Co-Heads of the Public Finance Department.

In proposing and reviewing candidates for layoff, a variety of factors were considered, including candidates' past performance, skill set, area of specialization, relationship capital with clients and co-workers, expected work horizon, and compensation. Along with the desire to maintain appropriately balanced work teams, individual characteristics were assessed through a strategic lens in an effort to determine which professionals would be most valuable on a forward-looking basis in a highly-fluid economic environment. Individuals in the same group, and in the same or similar positions, were compared against each other, but not against individuals in fundamentally dissimilar positions or in other groups.

Layoff selections were communicated to the Head/Co-Heads of the Public Finance Department, who made sure they collectively met the RIF expectations of the Municipal Securities Division and communicated those selections to the Division Head.

## **B. The Five Plaintiffs**

Ms. Amy Bartoletti began working at Citigroup in July 1992. She was promoted to Director within the Housing Group in 2003 and was "at risk" in that position for RIF I, RIF II, RIF III, and RIF IV. Ms. Bartoletti was laid off as part of RIF IV. The Housing Group was headed by Mr. Nicholas Fluehr at the time of RIF I, and he served in that role until he was laid off as part of RIF III. Following Mr. Fluehr's departure, Ms. Bartoletti and Mr. Michael Koessel were named Co-Heads of the Housing Group, although Mr. David Brownstein appears to have performed

some of the functions of the Group Head, including the selection of employees for RIF III and RIF IV.

Ms. Lisa Conley began working at Citigroup in June 1997. She was promoted to Director within the Healthcare Group in January 2005 and was "at risk" in that position for RIF I, RIF II, RIF III, and RIF IV. She was laid off as part of RIF IV. The Healthcare Group was co-headed by Mr. David Cyganowski and Mr. Fred Hessler during late 2007 through December 2008.

Ms. Nadine Mentor began working as a Vice President in the Southeast Group in June 2005. She was promoted to Director in that Group in January 2008 and served in that capacity until she was laid off as part of RIF IV. Ms. Mentor was at risk for RIF I as a Vice President. She was at risk for RIF II, RIF III, and RIF IV as a Director. The Southeast Group was headed by Mr. Norman Pellegrini during late 2007 through December 2008.

Ms. Brittany Sharpton began working as an Analyst within the Infrastructure Group in 2007. She was at risk in that position for RIF I, RIF II, RIF III, and RIF IV and she was laid off as part of RIF IV. The Infrastructure Group was headed by Mr. Thomas Green during late 2007 through December 2008.

Ms. Chia Siu began working as an Analyst within the Housing Group in 2006. She was at risk in that position for RIF I, RIF II, RIF III, and RIF IV and was laid off as part of RIF IV in November 2008. As noted above, the Housing Group was headed by Mr. Nicholas Fluehr during late 2007 and through his layoff as part of RIF III. Ms. Amy Bartoletti and Mr. Michael Koessel were named Co-Heads of the Housing Group subsequent to Mr. Fluehr's departure and served in that capacity until Ms. Bartoletti's layoff as part of RIF IV.

In summary, the five plaintiffs in this case worked in just four of the Public Finance Groups: Housing (Bartoletti and Siu), Healthcare (Conley), Southeast (Mentor), and Infrastructure (Sharpton). With the exception of the Housing Group, none of the four groups had a change in Group Head during the time period encompassing RIF I through RIF IV. Two of the five plaintiffs in this case (Bartoletti and Conley) worked as a Director from late 2007 until the November 2008 RIF. A third plaintiff (Mentor) worked as a Vice President into January 2008, and then as a Director until the November 2008 RIF. The remaining two plaintiffs (Sharpton and Siu) both worked as an Analyst from late 2007 until the November 2008 RIF.

### **III. Key Statistical Concepts, Principles, and Tools**

Simple female-male differences in RIF rates are not, by themselves, meaningful or appropriate indicators of gender discrimination in layoffs. The statistical significance of any observed difference must be assessed to determine whether it may be readily attributed to chance factors. Only when a difference is judged statistically significant on the basis of a formal statistical test, that is, a test of the null hypothesis that the true female-male difference in the RIF rates equals zero, is it potentially an indicator of gender discrimination.

A statistically insignificant female-male disparity in RIF rates would indicate that chance factors can account for an observed gender disparity. By contrast, a statistically significant female-male disparity in RIF rates indicates that one can rule out chance factors as accounting for the disparity. It does not, however, indicate that the disparity is due to gender discrimination. To constitute evidence of gender discrimination, a gender disparity in RIF rates must be statistically significant, *and* it must refer to individuals who are similarly situated with respect to key characteristics, job circumstances, and RIF processes and decision makers.

Statistical analysis can be of considerable use in evaluating the claim that an observed set of layoffs resulted from a discriminatory process. But, like any other tool, statistical analysis needs to be applied carefully and thoughtfully, with due recognition of its limitations. Knowing which variables to account for and how to account for them are issues that fall squarely within the domain of labor economics. Addressing these issues is critically important in the analysis of personnel data since misleading results can emerge when an inadequate set of control variables is used or when control variables are used improperly.

One pitfall that may arise in statistical analyses of gender discrimination claims involves the examination of data that are pooled across non-comparable individuals in a way that does not account appropriately for cross-individual differences. It is well established that misleading conclusions can result from this practice.

Matching the statistical tool to the nature of the outcome under study is also vital. For example, qualitative dependent variable methods are appropriate to the analysis of dichotomous outcomes such as selection or non-selection for a RIF.

In addition, it is critical that statistical tools conform to the nature of the data available. For example, exact tests are preferable to “large sample” tests when dealing with “small samples”.

Fisher’s Exact Test is appropriate to the analysis of gender disparities in selection for RIF when numbers employed or numbers of RIFs are “small” (among women or men). A Fisher’s Exact Test result of less than .05 indicates a statistically significant disparity and essentially corresponds to a z-statistic that exceeds 1.96 (in absolute value).

A generalization of Fisher’s Exact Test -- an Exact Test of the Conditional Independence of Three-Way Contingency Tables -- may be appropriate to the analysis of RIFs among multiple employment pools that share key features in common (e.g., the Group Head who selected people for layoff). This test assumes the homogeneity of odds ratios across the pools, which can in principle be tested, for example, using the Zelen Exact Test for the Homogeneity of Odds Ratios.<sup>1</sup> For the Exact Test of Conditional Independence of Three-Way Contingency Tables, a

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<sup>1</sup> The term “odds” refers to the ratio of the probability an event occurs to the probability it does not occur. This is effectively the ratio of the number of events to the number of non-events (e.g., the number of women in a particular position and group who were laid off as part of a particular RIF divided by the number of women in that position and group who were not laid off as part of that RIF). An odds ratio is the ratio of the odds of an event occurring in one group to the odds of

test result of less than .05 indicates a statistically significant disparity and essentially corresponds to a z-statistic that exceeds 1.96 (in absolute value).

Fisher's Exact Test cannot be constructed when the sample is entirely made up of women, or entirely made up of men. In addition, it cannot be constructed when there are no layoffs, or when all women and all men are laid off. In such cases, there is no disparity in the RIF rates for women and men, as the RIF rates for both are equal to either zero or 100%. If a Fisher's Exact Test cannot be constructed for a particular table, it will not be part of the Zelen Exact Test for the Homogeneity of Odds Ratios; nor will it be included in an Exact Test of Conditional Independence of Three-Way Contingency Tables. If all of the RIFs in all of the tables being examined occur among females, or they all occur among males, it is also not possible to construct the Zelen Exact Test for the Homogeneity of Odds Ratios (although in this case the odds ratios are identical). If all of the tables being examined have odds ratios of 0 or infinity, it is also not possible to construct the Zelen Exact Test for the Homogeneity of Odds Ratios.

#### **IV. Data and Descriptive Statistics**

Citigroup has provided data appropriate to conducting statistical analyses pertaining to the plaintiffs' allegations in this matter. The data cover employees (a) in the same career progression as the plaintiffs (i.e., Analyst through Managing Director), and (b) who were "at-risk" for one of the four RIF events that took place in the Public Finance Department between December 2007 and December 2008.

Four "snapshots" or rosters of at-risk employees were produced, as of the following dates (which precede by several days the first of any Notice Dates associated with each RIF):

- December 17, 2007 (corresponding to RIF I)
- March 16, 2008 (corresponding to RIF II)
- June 22, 2008 (corresponding to RIF III)
- November 17, 2008 (corresponding to RIF IV)

For each snapshot, employee-level information was provided on:

- Name
- Sex
- Position/Job Title
- Notice Date (indicates that an employee was laid off as part of the RIF)
- Original Date of Hire at Citigroup (or legacy entity)
- Group (within the Public Finance Department)

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it occurring in a comparison group (e.g., the odds of women in a particular position and group being laid off in a particular RIF divided by the odds of men in the same position and group being laid off as part of that same RIF). Testing for the homogeneity of odds ratios is a statistical test for their equality (e.g., the odds ratios between women and men being laid off as part of a particular RIF are the same across two or more position/group combinations).

Table 1A reports numbers of women, men, and total employees in the career progression from Analyst to Managing Director who were at risk of selection for RIF I in each group within the Public Finance Department. Table 1A also reports corresponding numbers of women, men, and total employees laid off in RIF I. Tables 1B through 1D report corresponding numbers for RIF II through RIF IV, respectively.<sup>2</sup>

The figures in Tables 1A through 1D show that there was considerable cross-group variation in the total number of employees and the proportion of women employees. The figures also show that the proportion of employees who were laid off varied considerably across the groups, in RIF I, RIF III, and RIF IV. The largest number of employees was laid off in connection with RIF IV, while the smallest number of layoffs took place as part of RIF II. The shaded areas in Tables 1A through 1D identify the groups (Healthcare, Housing, Infrastructure and Southeast) in which the five plaintiffs in this case were situated at the time of each RIF.

Table 2A reports numbers of women, men, and total employees who were at risk of selection for RIF I in the Healthcare, Housing, Infrastructure, and Southeast Groups. Table 2A also reports corresponding numbers of women, men, and total employees laid off in RIF I. The figures in Table 2A are reported separately for the six positions in the career progression from Analyst to Managing Director. Tables 2B through 2D report the corresponding numbers for RIF II through RIF IV, respectively. The shaded areas in Tables 2A through 2D identify the groups and jobs in which the five plaintiffs in this case were situated at the time of each RIF.

## **V. Analysis and Results**

The statistical analyses conducted and reported in this section conform to key features of the organization and RIF decision-making process noted above. There are two sets of analyses, both of which are done separately for RIF I through RIF IV.

The first set of analyses focuses on decisions related to the layoff expectations conveyed to the different groups in the Public Finance Department. This set of analyses involves using multiple regression techniques to test the cross-group association between RIF rates and percent women.

The second set of analyses focuses on layoff selections within the four groups in which the five plaintiffs were situated. This set of analyses involves the conduct of a series of exact tests for the independence of gender and layoff among similarly-situated individuals.

### **A. Cross-Group Regressions**

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<sup>2</sup> Analysts include employees with the following positions/titles: Analyst Class 2005, Analyst Class 2006, Analyst Class 2007, Analyst Class 2008, and Analyst-Non Production. Associates include employees with the following positions/titles: Associate, Associate Class of 2004, Associate Class of 2005, Associate Class of 2006, Associate Class of 2007, and Associate Class of 2008.

Table 3 reports the results of two sets of cross-group regression analyses. The dependent variable in these analyses is the percent of employees in the group who were laid off. The independent variable is the percent of women in the group. The first set of regression results is based on the application of ordinary least squares with robust standard errors. The second set of results is derived using weighted least squares, where the weights are formed using the number of employees in the corresponding group.

With respect to RIF IV, cross-group variations in the percent of employees who are laid off are not significantly positively correlated with corresponding cross-group variations in the percent of women employees. This finding holds for both regression analyses. It also holds for RIF I, RIF II, and RIF III, under both regression analyses. Insofar as the individual(s) involved in the determination of group RIF rates for RIF I, RIF II, and RIF III were essentially the same as for RIF IV (the only difference being that Mr. David Brownstein was not a Co-Head of the Public Finance Department at the time of RIF I), the results for RIF I, RIF II, and RIF III further support the inference that emerges from the results for RIF IV: no gender disparity adverse to women.

Based on the two regression methods applied to data for RIF I through RIF IV, but excluding the PR-Transfer Group from RIF I and excluding the Administration Group from RIF III and RIF IV, I also find cross-group RIF rates are not significantly positively correlated with cross-group variations in the percent of women. In addition, cross-group data on RIF counts are not significantly positively correlated with cross-group variations in the percent of women (controlling for group size).

## **B. Within-Group Exact Tests**

Tables 4A through 4E report the results of various exact tests of the independence between gender and selection for layoff in RIF I, RIF II, RIF III, and RIF IV. These tests are based on the data reported in Tables 2A through 2D.

Table 4A reports results relevant to Ms. Bartoletti's allegation of gender discrimination in selection for layoff in RIF IV.

- The first panel of Table 4A identifies the sample used to construct the relevant test. For Ms. Bartoletti, Sample (1) focuses on Directors in the Housing Group. These are the most direct and natural comparators for Ms. Bartoletti. Given that Directors in the Housing Group performed functions that could overlap those performed by Vice Presidents in the Housing Group, Sample (2) is based on the aggregation of Directors and Vice Presidents. For similar reasons, Sample (3) aggregates Directors and Managing Directors in the Housing Group. Sample (4) is based on data for all Housing Group employees in the career progression from Analyst to Managing Director. But this sample is not formed as a simple aggregation of the data for the six positions, which would impose the incorrect assumption that all Housing Group employees were close substitutes and compared against each other in selecting people for layoff. Rather, this sample is organized into six two-by-two tables that divide individuals on the basis of gender (women or men) and RIF (laid off or not), with each of the six tables corresponding to a different job/position in the career progression from Analyst to Managing Director. The rationale for looking at

all positions, including some not occupied by or comparable to the position held by Ms. Bartoletti, is that, for each RIF event, all selections for layoff in the Housing Group were made by the same decision-maker. As such, information from all RIF selections within the Housing Group may help inform an inference about possible gender disparities.

- As noted in Section III above, a Fisher's Exact Test is appropriate to testing the independence of gender and layoff for the data in samples (1), (2), and (3). Assuming the homogeneity of odds ratios, an Exact Test of Conditional Independence is appropriate to testing the independence of gender and layoff for the data in Sample (4). In constructing the Exact Test of Conditional Independence, two-by-two tables for which Fisher's Exact Tests cannot be constructed essentially drop out. These statements hold for Tables 4B through 4E as well.
- Test results for RIF I, RIF II, RIF III, and RIF IV are reported in the second through fifth panels of Table 4A. Notwithstanding the fact that Ms. Bartoletti was laid off as part of RIF IV, the test results for RIF III are directly relevant to assessing gender discrimination against Ms. Bartoletti since she was also at risk for that layoff, which also involved Mr. Brownstein serving as *de facto* Group Head for purposes of the RIF selections.
- With respect to RIF IV, all of the test results reported in Table 4A are statistically insignificant (i.e., they do not reject the null hypothesis of independence between gender and layoff). These results offer no statistical support for Ms. Bartoletti's allegation of gender discrimination in selection for layoff. This conclusion gains additional credibility from the fact that all of the computable test results for RIF III are also statistically insignificant. I would note that they are statistically insignificant for RIF I and RIF II as well, when Mr. Fluehr served as Group Head.
- As a point of reference, the construction of a Fisher's Exact Test based on the simple aggregation of all Housing Group employees in the career progression from Analyst to Managing Director also does not reject the independence of gender and layoff. This result holds for RIF I, RIF II, RIF III, and RIF IV. However, as noted above, such aggregation imposes the incorrect assumption that all Housing Group employees were close substitutes and compared against each other in selecting people for layoff. As such, this result cannot support a meaningful inference about the possible existence of gender discrimination against Ms. Bartoletti.

Table 4B reports results relevant to Ms. Conley's allegation of gender discrimination in selection for layoff.

- The first panel of Table 4B identifies the sample used to construct the relevant test. For Ms. Conley, Sample (1) focuses on Directors in the Healthcare Group. These are the most direct and natural comparators for Ms. Conley. Given that Directors in the Healthcare Group performed functions that could overlap those performed by Vice Presidents in the Healthcare Group, Sample (2) is based on the aggregation of Directors and Vice Presidents. For similar reasons, Sample (3) aggregates Directors and Managing Directors in the Healthcare Group. Sample (4) is based on data for all Healthcare Group employees in the career progression from Analyst to Managing Director. But this sample is not formed as a simple aggregation of the data for the six positions, which would impose the incorrect assumption that all Healthcare Group employees were close substitutes and compared against each other in selecting people for layoff. Rather, this sample is

organized into six two-by-two tables that divide individuals on the basis of gender (women or men) and RIF (laid off or not), with each of the six tables corresponding to a different job/position in the career progression from Analyst to Managing Director. The rationale for looking at all positions, including some not occupied by or comparable to the position held by Ms. Conley, is that, for each RIF event, all selections for layoff in the Healthcare Group were made by the same Group Head(s). As such, information from all RIF selections within the Healthcare Group may help inform an inference about possible gender disparities.

- Test results for RIF I, RIF II, RIF III, and RIF IV are reported in the second through fifth panels of Table 4B. Notwithstanding the fact that Ms. Conley was laid off as part of RIF IV, the test results for RIF I, RIF II, and RIF III are directly relevant to assessing gender discrimination against Ms. Conley since she was at risk for layoff in all of them and they all involved the same Group Co-Heads (Mr. Hessler and Mr. Cyganowski).
- With respect to RIF IV, all of the test results reported in Table 4B are statistically insignificant (i.e., they do not reject the null hypothesis of independence between gender and layoff). These results offer no statistical support for Ms. Conley's allegation of gender discrimination in selection for layoff. This conclusion gains additional credibility from the fact that all of the computable test results for RIF I, RIF II, and RIF III are also statistically insignificant.
- As a point of reference, the construction of a Fisher's Exact Test based on the simple aggregation of all Healthcare Group employees in the career progression from Analyst to Managing Director also does not reject the independence of gender and layoff. This result holds for RIF I, RIF III, and RIF IV (the Fisher's Exact Test cannot be computed for RIF II because there were no layoffs in the Healthcare Group in this round). However, as noted above, such aggregation imposes the incorrect assumption that all Healthcare Group employees were close substitutes and compared against each other in selecting people for layoff. As such, this result cannot support a meaningful inference about the possible existence of gender discrimination against Ms. Conley.

Table 4C reports results relevant to Ms. Mentor's allegation of gender discrimination in selection for layoff.

- The first panel of Table 4C identifies the sample used to construct the relevant test. For Ms. Mentor, Sample (1) focuses on Vice Presidents in the Southeast Group. These are the most direct and natural comparators for Ms. Mentor in RIF I, as that was her job/position at that time. By the time of RIF II, Ms. Mentor had been promoted to Director. Thus, Sample (2) focuses on Directors in the Southeast Group. Given that Vice Presidents in the Southeast Group performed functions that could overlap those performed by Directors in the Southeast Group, Sample (3) is based on the aggregation of Directors and Vice Presidents. For similar reasons, Sample (4) aggregates Directors and Managing Directors in the Southeast Group (relevant for the RIFs when Ms. Mentor served as a Director: RIF II, RIF III, and RIF IV). Sample (5) is based on data for all Southeast Group employees in the career progression from Analyst to Managing Director. But this sample is not formed as a simple aggregation of the data for the six positions, which would impose the incorrect assumption that all Southeast Group employees were close substitutes and compared against each other in selecting people for layoff. Rather, this

sample is organized into six two-by-two tables that divide individuals on the basis of gender (women or men) and RIF (laid off or not), with each of the six tables corresponding to a different job/position in the career progression from Analyst to Managing Director. The rationale for looking at all positions, including some not occupied by or comparable to the position held by Ms. Mentor, is that, for each RIF event, all selections for layoff in the Southeast Group were made by the same Group Head (i.e., Mr. Pellegrini). As such, information from all RIF selections within the Southeast Group may help inform an inference about possible gender disparities.

- Test results for RIF I, RIF II, RIF III, and RIF IV are reported in the second through fifth panels of Table 4C. Notwithstanding the fact that Ms. Mentor was laid off as part of RIF IV, the test results for RIF I, RIF II, and RIF III are directly relevant to assessing gender discrimination against Ms. Mentor since she was at risk for layoff in all of them and they all involved the same Group Head (i.e., Mr. Pellegrini).
- With respect to RIF IV, all of the test results reported in Table 4C are statistically insignificant (i.e., they do not reject the null hypothesis of independence between gender and layoff). These results offer no statistical support for Ms. Mentor's allegation of gender discrimination in selection for layoff. This conclusion gains additional credibility from the fact that all of the computable test results for RIF I, RIF II, and RIF III are also statistically insignificant.
- As a point of reference, the construction of a Fisher's Exact Test based on the simple aggregation of all Southeast Group employees in the career progression from Analyst to Managing Director also does not reject the independence of gender and layoff. This result holds for RIF I, RIF II, and RIF IV (the Fisher's Exact Test cannot be computed for RIF III because there were no layoffs in the Southeast Group in this round). However, as noted above, such aggregation imposes the incorrect assumption that all Southeast Group employees were close substitutes and compared against each other in selecting people for layoff. As such, this result cannot support a meaningful inference about the possible existence of gender discrimination against Ms. Mentor.

Table 4D reports results relevant to Ms. Sharpton's allegation of gender discrimination in selection for layoff.

- The first panel of Table 4D identifies the sample used to construct the relevant test. For Ms. Sharpton, Sample (1) focuses on Analysts in the Infrastructure Group. These are the most direct and natural comparators for Ms. Sharpton. Given that Analysts in the Infrastructure Group performed functions that could overlap those performed by Associates in the Infrastructure Group, Sample (2) is based on the aggregation of Analysts and Associates. Sample (3) is based on data for all Infrastructure Group employees in the career progression from Analyst to Managing Director. But this sample is not formed as a simple aggregation of the data for the six positions, which would impose the incorrect assumption that all Infrastructure Group employees were close substitutes and compared against each other in selecting people for layoff. Rather, this sample is organized into six two-by-two tables that divide individuals on the basis of gender (women or men) and RIF (laid off or not), with each of the six tables corresponding to a different job/position in the career progression from Analyst to Managing Director. The rationale for looking at all positions, including some not

occupied by or comparable to the position held by Ms. Sharpton, is that, for each RIF event, all selections for layoff in the Infrastructure Group were made by the same Group Head (Mr. Green). As such, information from all RIF selections within the Infrastructure Group may help inform an inference about possible gender disparities.

- Test results for RIF I, RIF II, RIF III, and RIF IV are reported in the second through fifth panels of Table 4D. Notwithstanding the fact that Ms. Sharpton was laid off as part of RIF IV, the test results for RIF I, RIF II, and RIF III are directly relevant to assessing gender discrimination against Ms. Sharpton since she was at risk for layoff in all of them and they all involved the same Group Head (Mr. Green).
- With respect to RIF IV, all of the test results reported in Table 4D are statistically insignificant (i.e., they do not reject the null hypothesis of independence between gender and layoff). These results offer no statistical support for Ms. Sharpton's allegation of gender discrimination in selection for layoff. This conclusion gains additional credibility from the fact that all of the computable test results for RIF I, RIF II, and RIF III are also statistically insignificant.
- As a point of reference, the construction of a Fisher's Exact Test based on the simple aggregation of all Infrastructure Group employees in the career progression from Analyst to Managing Director rejects the independence of gender and layoff for RIF IV. However, as noted above, such aggregation imposes the incorrect assumption that all Infrastructure Group employees were close substitutes and compared against each other in selecting people for layoff. As such, this result cannot support a meaningful inference about the possible existence of gender discrimination against Ms. Sharpton. I would also note that the construction of a Fisher's Exact Test based on the simple aggregation of all Infrastructure Group employees in the career progression from Analyst to Managing Director does not reject the independence of gender and layoff for RIF I (the Fisher's Exact Test cannot be computed for RIF II and RIF III because there were no layoffs in the Infrastructure Group in these rounds).

Table 4E reports results relevant to Ms. Siu's allegation of gender discrimination in selection for layoff.

- The first panel of Table 4E identifies the sample used to construct the relevant test. For Ms. Siu, Sample (1) focuses on Analysts in the Housing Group. These are the most direct and natural comparators for Ms. Siu. Given that Analysts in the Housing Group performed functions that could overlap those performed by Associates in the Housing Group, Sample (2) is based on the aggregation of Analysts and Associates. Sample (3) is based on data for all Housing Group employees in the career progression from Analyst to Managing Director. But this sample is not formed as a simple aggregation of the data for the six positions, which would impose the incorrect assumption that all Housing Group employees were close substitutes and compared against each other in selecting people for layoff. Rather, this sample is organized into six two-by-two tables that divide individuals on the basis of gender (women or men) and RIF (laid off or not), with each of the six tables corresponding to a different job/position in the career progression from Analyst to Managing Director. The rationale for looking at all positions, including some not occupied by or comparable to the position held by Ms. Siu, is that, for each RIF event, all selections for layoff in the Housing Group were made by the same decision-maker. As

such, information from all RIF selections within the Housing Group may help inform an inference about possible gender disparities.

- Test results for RIF I, RIF II, RIF III, and RIF IV are reported in the second through fifth panels of Table 4E. Notwithstanding the fact that Ms. Siu was laid off as part of RIF IV, the test results for RIF III are directly relevant to assessing gender discrimination against Ms. Siu since she was also at risk for that layoff, which also involved Mr. Brownstein serving as *de facto* Group Head for purposes of the RIF selections.
- With respect to RIF IV, all of the test results reported in Table 4E are statistically insignificant (i.e., they do not reject the null hypothesis of independence between gender and layoff). These results offer no statistical support for Ms. Siu's allegation of gender discrimination in selection for layoff. This conclusion gains additional credibility from the fact that all of the computable test results for RIF III are also statistically insignificant. I would note that they are statistically insignificant for RIF I and RIF II as well, when Mr. Fluehr served as Group Head.
- As a point of reference, and as noted above with respect to Ms. Bartoletti, the construction of a Fisher's Exact Test based on the simple aggregation of all Housing Group employees in the career progression from Analyst to Managing Director also does not reject the independence of gender and layoff. This result holds for RIF I, RIF II, RIF III, and RIF IV. However, as noted above, such aggregation imposes the incorrect assumption that all Housing Group employees were close substitutes and compared against each other in selecting people for layoff. As such, this result cannot support a meaningful inference about the possible existence of gender discrimination against Ms. Siu.

## VI. Summary of Opinions

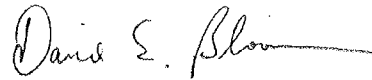
Based on my review and analysis of documents, data, and other information in this matter, I find no statistical support for any of the five plaintiffs' allegations that they were discriminated against on the basis of their gender when they were laid off in November 2008.

I find no statistically significant positive effects of the percent women on the RIF rates for different groups within the Public Finance Department. This finding holds for RIF I, RIF II, RIF III, and RIF IV using different weighting procedures and specifications.

For each of the five plaintiffs, I find no statistically significant gender disparities in selection for layoff among individuals who were similarly situated to each plaintiff with respect to their job/position and group. This finding holds for RIF I, RIF II, RIF III, and RIF IV.

My analyses are well informed by key features of the RIF processes and the relevant economic and organizational context in which they were implemented. They reflect the application of well-established and appropriate concepts and tools from the fields of labor economics and statistics to data that are relevant to addressing the issues in this case, and they yield a decisive set of results that are robust to a range of alternative specifications and statistical analyses. As such, the

allegations of all five plaintiffs that they were discriminated against on the basis of gender when they were laid off in November 2008 are inconsistent with my findings.

A handwritten signature in cursive script, reading "David E. Bloom". The signature is written in black ink and is positioned above a horizontal line.

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David E. Bloom  
December 11, 2012